

## REMARKS

Applicant wishes to thank the Examiner for indicating claim 11 as being allowable subject matter. Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

In the outstanding Office Action of March 9, 2007, the Examiner objected to the drawings because, in his opinion, claims 1-11 were not adequately illustrated by the drawings and that the multiplexing recited in claims 2 and 9 were not adequately illustrated. Applicant respectfully disagrees with the Examiner's position. M.P.E.P. § 608.02(d) states that:

The drawing in a nonprovisional application must show every feature of the invention specified in the claims. However, conventional features disclosed in the description and claims, where their detailed illustration is not essential for a proper understanding of the invention, should be illustrated in the drawing in the form of a graphical drawing symbol or a labeled representation (e.g., a labeled rectangular box)." (emphasis added).

Applicant submits that the drawings of the present application are fully in compliance with the requirements of the M.P.E.P. quoted above. In particular, all essential elements and/or methods are included in the drawings. Those processes which cannot be adequately represented or would be unduly burdensome to illustrate have been labeled and explained in more detail in the specification for the present application. Moreover, certain processes, e.g., multiplexing, would be understood by those of ordinary skill in the art, without the need for explicit drawings. For example, at Section 16 of the outstanding Office Action, the Examiner indicated that he understood the meaning of the term "multiplexing" without indicating any confusion due to the alleged inadequacy of the drawings. Moreover, connections involving multiplexing have been generally referenced/representatively labeled in the drawings. For example, radio interface 22 of Figure 1 and links 65, 67, and 69 of Figure 3, are all representatively labeled and further described in paragraphs [0022]-[0025] of the present application as having the ability to be multiplexed. Another example is claim 3, where it is recited that the relay station is not directly connected to the base station but is connected to the base station through at least two different relay stations. Applicant submits that this

limitation is clearly illustrated, for example, in Figure 3, where relay station (RS) 56 communicates over links 65 via another RS 60 en route to base station (BS) 54. With regard to claim 5, for example, it is recited that the method further comprises dynamically reusing communication resources between the user equipment and the multiple relay stations. Applicant submits that the drawings of the present application illustrate various elements/systems and flow charts to describe various methods, but Applicant is at a loss as to how “dynamic reuse of communication resources” can be illustrated beyond using labeled representations, as required by the M.P.E.P., and for example, further textual support in the specification, which Applicant has provided.

The Examiner rejected claims 2 and 9 under 35 U.S.C. § 112, second paragraph because, in his opinion, the term multiplexing is not clearly redefined. Claims 15 and 16 were rejected under 35 U.S.C. § 112, second paragraph for lack of antecedent basis. Applicant traverses the rejections for the reasons set forth below.

With regard to the term “multiplexing” as recited in claims 2 and 9, Applicant submits that this is a known term of art which is commonly understood by those of ordinary skill in the art. For example, page 545 of Newton’s Telecom Dictionary, 15<sup>th</sup> Edition, Harry Newton, 1999 defines multiplexing as “transmitting two or more signals over a single channel.” The Examiner’s interpretation of “selecting one of many data sources and outputting that data source into a single channel” on the other hand effectively suggests a one-to-one link, since only one of a plurality of sources is ultimately output. Moreover, the Examiner’s rejection has attempted to define the term multiplexing in accordance with his own understanding and then has proceeded to assert that his alleged interpretation does not meet what he believes to be the accepted meaning of the term. Applicant submits that such argumentation is circuitous and inappropriate.

As to claims 15 and 16, Applicant submits that there is no lack of antecedent basis issue therein. Claims 15 and 16 recite “the relay station” and “the at least one other relay station.” The phrase “the at least one other” can be considered to be an adjective or modifying phrase that distinguishes the two relay stations adequately.

The Examiner rejected claims 1-3, 6, 9, 12, and 14-16 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent Publication No. 2003/0165127 (Fujiwara et al.) Applicant traverses the rejections for the reasons set forth below.

The Examiner asserted that Fujiwara et al. teaches all of the required limitations of independent claims 1 and 12, where the Examiner interpreted a source station 1 to be equivalent to the claimed base station and a destination station 3 to be equivalent to the claimed user equipment. Furthermore, the Examiner asserted that separate communications inherently suggest separate processing of these separate paths. Applicant respectfully disagrees with the Examiner's position. In particular, Applicant submits that the Examiner has mischaracterized the source station 1 and the destination station 3 of Fujiwara et al. Additionally, Applicant submits that Fujiwara et al. does not inherently teach or suggest the separate processing of paths.

Fujiwara et al. teaches a multi-hop system and method, where the use of relay stations can suppress an increase of interference noise. (*See, e.g.*, Abstract and paragraph [0009]). Fujiwara et al. further teaches that minimum required transmission power values are relayed between various stations and utilized during communications therebetween, where a pilot signal from one station is relayed to other stations informing them of transmission power requirements. (*See, e.g.*, paragraphs [0010]-[0016] and [0044]-[0081]). Although Fujiwara et al. refers to a source station 1, a destination station 3, and various relay stations therein, Applicant submits that the actual nature of these stations is unclear. For example, Fujiwara et al. describes that the relay stations and destination stations are comprised of exactly the same elements, the only difference being a calculation unit in a relay station that is configured to specify a transmission path from the source station 1 to a relay station and a calculation unit in the destination station that is configured to specify a transmission path from the source station to the destination station. (*See, e.g.*, paragraph [0010]). This description therefore suggests that the destination station 3 is merely another relay station whereat a transmission will terminate, not a user equipment, which is contrary to the Examiner's assertions.

Alternatively, paragraphs [0018] and [0019] of Fujiwara et al. describe a third embodiment, where a radio station performs signal transmission with at least one of a source

station, relay station, and destination station, where the radio station corresponds to a relay station, a destination station, and another station. This embodiment would suggest that all stations in Fujiwara et al., whether they are labeled as a source, destination, or relay station are all the same type of entities. In contrast, independent claims 1 and 12 explicitly require the communication between a relay station and a base station, and the communication between user equipment and the relay station. In other words, three distinct elements are described in claims 1 and 12, not simply a plurality of relay stations as suggested by Fujiwara et al.

Alternatively still, because Fujiwara et al. refers to a source station and a destination station, it could be argued that user equipment is being described inasmuch as user equipment generally is considered to be the source of a transmission, where the source wishes to communicate with another user equipment, i.e., a destination. However, even given this interpretation, Fujiwara et al. would result only in a teaching of two user equipment elements and relay stations. In contrast, claims 1 and 12 require a base station, in addition to the user equipment and the relay station(s). Therefore, Applicant submits that there is no reasonable interpretation of Fujiwara et al. that could be argued as teaching each of a user equipment, a base station, and a relay station.

In addition and as described above, Fujiwara et al. teaches that the destination station 3 selects a transmission path having the minimum total of the required transmission power values of respective stations along the transmission path, where the pilot signal is transmitted to the source station 1 and the relay station 2. This is done so that all the stations can determine the appropriate transmission path identified by the pilot signal. (*See, e.g.,* paragraph [0081] of Fujiwara et al.) In other words, Fujiwara et al. explicitly teaches away from any suggestion that separate communications are processed separately. Quite to the contrary, Fujiwara et al. suggests that each transmission path has already been identified in the pilot signal, and each station works in conjunction with each other station and in accordance with the same pilot signal. In contrast, independent claims 1 and 12 explicitly require that the processing of communications between the relay station and the base station with the first radio interface be separate from the communication between the user equipment

and the relay station. Applicant directs the Examiner to paragraphs [0025]-[0027] and [0031]-[0033] of the present application for a further description of this feature.

Furthermore, Applicant submits that because each of claims 2, 3, 6, 9, and 14-16, depend from independent claims 1 and 12, Fujiwara et al. also fails to teach each and every limitation of these claims as well.

Claims 17, 18, 22, and 23 were rejected under 35 U.S.C. § 102(e) as being anticipated over U.S. Patent No. 7,184,703 (Naden et al.) The Examiner asserted that Naden et al. teaches all of the required limitations of independent claims 17 and 22. Applicant again respectfully disagrees with the Examiner's position. In particular, Applicant submits that the Examiner has failed to show that Naden et al. teaches a radio interface that communicates with relay stations and a processor coupled to the radio interface for providing commands for multiple input, multiple output (MIMO) communication via the radio interface when high data rates are needed. Naden et al. teaches a multi-hop system and method where a decision is made about which relays are included in certain communication paths to reduce signaling overhead. (*See, e.g.*, Abstract and Column 5, line 63-Column 8, line 58). However, nowhere in Naden et al. is a radio interface that communicates with relay stations described. To wit, the Examiner merely cited to certain sentences in the Abstract, which generally mention multi-hop systems and relays. Therefore, although not explicitly stated by the Examiner, Applicant must assume that this feature was interpreted to be inherent in Naden et al.

Even if a radio interface having the claimed features could be considered to be inherent in Naden et al., the Examiner cited to what is effectively only a generalized summary statement at the end of the description thereof that only once, mentions MIMO generally. However, a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). In this instance, it again appears by the Examiner's assertions that the claimed processor that is coupled to the radio interface for providing commands for MIMO communication via the radio interface when high data rates are needed is somehow inherent in Naden et al. However, Applicant has been given no reason or argumentation to suggest

this position, because again, radio interfaces that communicate with relay stations are not described in Naden et al., nor is a processor discussed that is configured to provide MIMO communications instructions when high data rates are needed. In fact, Column 2, line 43-Column 3, line 50 and Column 6, line 29-Column 8, line 44 clearly suggests that Naden et al. is directed to imparting a relay station with the functionality to choose one of a plurality of signals which are of the highest quality in terms of Signal to Interference and Noise Ratio (SINR). Therefore, Naden et al. has no need for a radio interface that gives instructions to relay stations, let alone instructions to provide MIMO communications when high data rates are needed.

In contrast and as described above, independent claims 17 and 22 explicitly require a radio interface that communicates with relay stations and a processor coupled to the radio interface for providing commands for MIMO communication via the radio interface when high data rates are needed. Applicant submits that the Examiner has failed to make a prima facie case of anticipation. For a prior art reference to anticipate the claim of a patent, the reference must disclose each and every limitation of a claimed invention. *See Apple Computer, Inc. v. Articulate Systems, Inc.*, 234 F.3d 14, 20 (Fed. Cir. 2000). To make a prima facie case of anticipation, the Examiner must show that a reference contains a disclosure which is specific as to every element of the claims at issue. *See, e.g., In re Jochen Wagner and Helmut Wiss*, 2001 WL 1048474 (B. Pat. App & Interf. 2001), *In re Wilder*, 57 C.C.P.A. 1314, 1319, 429 F.2d 447, 451 (C.C.P.A. 1970). In this instance, the Examiner has not shown where each and every limitation of independent claims 17 and 22 is taught, suggested, or inherent in Naden et al.

Additionally, Applicant submits that because each of claims 18 and 23 depend from independent claims 17 and 22, Naden et al. also fails to teach each and every limitation of these claims as well.

Claim 4 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Fujiwara et al. in view of U.S. Patent Publication No. 2002/0173310 (Ebata et al.) Claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Fujiwara et al., Ebata et al., and further in view of U.S. Patent No. 5,913,168 (Moreau et al.) Claims 7 and 10 were rejected under 35

U.S.C. § 103(a) as being unpatentable over Fujiwara et al. in view of Naden et al. Claims 8 and 13 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Fujiwara et al. in view of Moreau et al. Claims 19-21 and 24 were 35 U.S.C. § 103(a) as being unpatentable over Naden et al. in view of Fujiwara et al. Applicant submits that none of these references cure the prior art deficiencies described above. Each of these additional references and combinations was asserted by the Examiner in an attempt to reject features recited only in these dependent claims and not recited in independent claims 1, 12, 17, and 22 of the present application. Therefore, the Examiner has not alleged that any of these references or combinations thereof teach the features missing from Fujiwara et al. and Naden et al.

Because none of the references cited by the Examiner, either separately or in combination with each other, teach all of the required limitations of independent claims 1, 12, 17, and 22, Applicant submits that each of these independent claims are patentable over this prior art. Furthermore, because dependent claims 2-11, 13-16, 18-20, and 21-24 are each directly or indirectly dependent upon independent claims 1, 12, 17, and 22, Applicant submits that each of these claims are allowable for at least the same reasons as discussed above.

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for

such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date: June 11, 2007

By /G. Peter Albert Jr./

FOLEY & LARDNER LLP  
Customer Number: 30542  
Telephone: (858) 847-6735  
Facsimile: (858) 792-6773

G. Peter Albert Jr.  
Attorney for Applicant  
Registration No. 37,268